



Spectral Gamma-Ray Borehole
Log Data Report

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Borehole

20-02-07

Log Event A

Borehole Information

Farm : <u>B</u>	Tank : <u>B-102</u>	Site Number : <u>299-E33-181</u>
N-Coord : <u>45,300</u>	W-Coord : <u>52,575</u>	TOC Elevation : <u>652.62</u>
Water Level, ft :	Date Drilled : <u>3/31/1972</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>100</u>	

Borehole Notes:

Borehole 20-02-07 was drilled in March 1972. The borehole was completed at a depth of 100 ft with 6-in. casing.

The casing thickness is presumed to be 0.280 in., on the basis of the published thickness for schedule-40, 6-in. steel pipe.

Equipment Information

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>04/1997</u>	Calibration Reference : <u>GJO-HAN-14</u>	Logging Procedure : <u>P-GJPO-1783</u>

Logging Information

Log Run Number : <u>1</u>	Log Run Date : <u>09/08/1997</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>10.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>09/09/1997</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>98.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>9.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



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Logging Operation Notes:

This borehole was logged by the SGLS in two log runs. The total logging depth achieved was 98.0 ft. The top of the casing, which is the zero reference for the SGLS, is approximately even with the ground surface. The present measured depth of the borehole is 98.7 ft.

Analysis Information

Analyst : H.D. Mac Lean

Data Processing Reference : MAC-VZCP-1.7.9

Analysis Date : 04/24/1998

Analysis Notes :

The pre- and post-survey field verification spectra for all logging runs met the acceptance criteria established for peak shape and system efficiency. The energy calibration and peak-shape calibration from these spectra were used to establish the peak resolution and channel-to-energy parameters used in processing the spectra acquired during the logging operation.

A casing correction factor for a 0.280-in.-thick steel casing was applied to the concentration data during the analysis process.

Shape factor analysis was applied to the SGLS data. Shape factor parameters can provide insights into the distribution of Cs-137 contamination and into the nature of zones of elevated total count gamma-ray activity not attributable to gamma-emitting radionuclides.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations. Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

Results/Interpretations:

The man-made radionuclide Cs-137 was detected at the ground surface, nearly continuously between depths of 0.5 and 8 ft, and from 12 to 20.5 ft. Isolated occurrences were detected at depths of 22 and 29 ft. A concentration of about 5 pCi/g was measured at a depth of 1 ft. Measured Cs-137 concentrations below 1 ft were 1 pCi/g or less.

The K-40 concentrations increase at a depth of 40 ft and remain elevated to a depth of about 75 ft. The K-40 concentrations gradually increase from 75 to 85 ft and generally remain elevated to the bottom of the borehole.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data



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Report for tank B-102.